AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently Amended): A method for an automatic determination of a ~~physical, technical method and/or colloidal chemistry~~ parameter <u>of a sample</u> using a measurement device, by a determination of an attenuation of radiated waves during a segregation of a monodisperse or polydisperse dispersion sample, the method comprising:

(a)   during the segregation, repeatedly determining and recording momentary transmission values $I_T(t, r)$, and optionally scattering values $I_S(t, r)$, characterizing a current segregation status of the sample using waves radiated with intensity values $I_o(t, r)$ as a function of a position r within the sample at a time t, for one or more wavelengths over at least a partial section of the sample, simultaneously for multiple positions r<u>, wherein the repeated determinination of momentary transmission values $I_T(t, r)$, and optionally scattering values $I_S(t, r)$, is conducted with the measurement device</u>;

(b)   calculating extinction profiles $E_T(t, r)$ by finding a log of a ratio of $I_o(t, r)$ / $I_T(t, r)$ for a determination of a particle or droplet concentration for the dispersion sample as a function of the sample position and time;

(c)   from the extinction profiles $E_T(t, r)$ determined at different times and a local adjustment made in time segments, calculating segregation speeds for any constant extinction values; and

(d)　　from a ratio of the segregation speeds determined for specific extinction percentiles, calculating a polydispersity index.

Claim 2 (Previously Presented): The method according to claim 1, wherein particle or droplet sizes and a particle or droplet size distribution are determined.

Claim 3 (Currently Amended): The method according to claim 2, comprising determining the extinction profiles as a function at a freely selectable position or over a range of the sample, and wherein the particle or droplet size distribution is calculated from the extinction profiles.

Claim 4 (Previously Presented): The method according to claim 25, comprising calculating an apparent relative viscosity as a function of concentration by volume from the concentration-dependent hindrance function, taking into account the concentration by volume.

Claim 5 (Previously Presented): The method according to claim 1, comprising determining a sedimentation type and a critical concentration by volume from the change in the segregation speed during the segregation.

Claim 6 (Previously Presented): The method according to claim 1, comprising increasing the ascertainable range of a particle or droplet size distribution as well as a resolution with respect to the distribution by varying the measurement time

intervals, and varying the number of revolutions per minute of a centrifuge when segregation is conducted by centrifugation.

Claim 7 (Previously Presented): The method according to claim 1 wherein a mass density distribution of the sample is calculated from the extinction profiles $E_T(t, r)$ for a known distribution of particle sizes.

Claim 8 (Previously Presented): The method according to claim 1 wherein for mixtures of substances of different densities, a distribution of particle or droplet sizes for the individual substance components is calculated from the extinction profiles.

Claim 9 (Previously Presented): The method according to claim 1, wherein segregation is conducted by centrifugation, and the method comprises computing indices for a consolidation behavior of the sample, by gradually changing the number of revolutions per minute of the centrifuge during centrifugation.

Claim 10 (Previously Presented): The method according to claim 1, wherein control of a segregation analyzer and a measurement sensor, including a radiation source, sample management and data transfer, data handling and data storage, and steps of analysis and documentation of the results, takes place by software supported by a database.

Claim 11 (Currently Amended): A device for an automatic determination of a ~~physical, technical method and/or colloidal chemistry~~ parameter <u>of a sample</u>, the device comprising:

a sample receptacle unit; and

a spectrometric measurement device with a source producing monochromatic parallel radiation, which measures radiation intensity scattered or transmitted by a dispersion sample over a partial or entire length of the sample, simultaneously for multiple positions of the sample, and provides a radiation intensity measurement for each of the multiple positions at which a measurement is taken<u>, wherein the radiation intensity measurements characterize a segregation status of the sample</u>.

Claim 12 (Previously Presented): The device according to claim 11, wherein the sample receptacle unit comprises different cuvettes matched to a measurement task and/or the dispersion sample with respect to an optical path length, the cuvette type is detected automatically, and the parameters required for the analysis of the measurement results are automatically made available via database entries for a calculation of the parameter to be analyzed.

Claim 13 (Previously Presented): The device according to claim 11, wherein the source producing monochromatic parallel radiation comprises a plurality of radiation sources of different monochromatic wavelengths, whose radiation intensity $I_o(t, r)$ can be varied.

Claim 14 (Previously Presented): The device according to claim 11, further comprising a thermostat for controlling a measurement range and carrying out measurements at selectable temperatures both under as well as over room temperature.

Claim 15 (Previously Presented): The device according to claim 11 wherein the sample receptacle unit is a multi-sample receptacle unit designed as a rotor, and is driven by a motor with programmable variable and/or constant revolutions.

Claim 16 (Previously Presented): The device according to claim 15, wherein the multi-sample receptacle unit is capable of accepting samples placed vertically for segregation in a gravitational field.

Claim 17 (Currently Amended): The method according to claim 1, wherein the ~~physical, technical method and/or colloidal chemistry~~ parameter of the sample that is determined is selected from the group consisting of particle size, distribution of particle size, speed distribution, particle flux, hindrance function, index of structural stability and a combination thereof.

Claim 18 (Canceled)

Claim 19 (Previously Presented): The method according to claim 29, wherein at least transmission values $I_T(t, r)$ are detected, wherein the characterizing step comprises calculating an extinction profile $E_T(t, r)$ by finding a log of a ratio of

$I_o(t, r) / I_T(t, r)$ for a determination of a particle or droplet concentration for the sample as a function of the sample position and time.

Claim 20 (Previously Presented): The method according to claim 19, comprising calculating multiple extinction profiles $E_T(t, r)$ determined at different times, and from the extinction profiles $E_T(t, r)$, calculating segregation speeds.

Claim 21 (Previously Presented): The method according to claim 1, further comprising:

(e)   calculating extinction-weighted distributions of the particle or droplet size from extinction profiles $E_T(t, r)$ for selectable times, in relation to an initial extinction profile of the sample.

Claim 22 (Previously Presented): The method according to claim 1, further comprising:

(f)   calculating cumulative volume-weighted distributions of the particle or droplet size from any extinction profiles acquired at time t according to (b), wherein

(1)   a volume-specific extinction cross section that is dependent on particle size is calculated according to Mie-theory while including the device constants from known optical parameters of the sample, or

(2)   a volume-specific extinction cross section that is dependent on particle size is determined if the extinction of at least two monodisperse reference samples is determined, or

(3)   a volume-specific extinction cross section that is dependent on particle size is determined if the course of the extinction is determined during the segregation of at least one polydisperse substance system with similar optical characteristics.

Claim 23 (Previously Presented): The method according to claim 22, further comprising:

(g)   using the volume-weighted distribution of particle or droplet sizes determined in (f) and a particle size dependency for the volume-specific extinction cross section determined in steps (f)(1), (f)(2) or (f)(3), assigning each radial position and the particle size associated with it a volume concentration.

Claim 24 (Previously Presented): The method according to claim 1, further comprising:

(h)   determining a flux density function standardized to a centrifugation constant from a change in the concentration of the sample with a known starting concentration.

Claim 25 (Previously Presented): The method according to claim 1, further comprising:

(i)   determining a concentration-dependent hindrance function for the sample.

Claim 26 (Previously Presented): The method according to claim 1, further comprising:

(j)   determining a volume-weighted distribution of the Stokes equivalent diameter for the case when a hindrance function is not equal to 1 until the difference between the concentration profiles of consecutive steps are less than a value to be provided in advance, or if the allowance for a hydrodynamic impediment is provided by a mathematical algorithm.

Claim 27 (Canceled)

Claim 28 (Previously Presented): The method according to claim 1, wherein the polydispersity index calculated in step (d) is characteristic for the polydispersity of the density or a particle or droplet size.

Claim 29 (Currently Amended): A method for determining a parameter of a sample using a measurement device, the method comprising:

radiating the sample with waves having intensity values $I_o(t, r)$, at multiple positions r of the sample at a time t;

during segregation of the sample, detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$ of the sample, simultaneously for multiple positions $r_\perp$ [[;]] ~~and~~ characterizing a segregation status of the sample from the transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$.

Claim 30 (Previously Presented): The method according to claim 29, further comprising recording the transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$.

Claim 31 (Previously Presented): The method according to claim 29, wherein the radiating, detecting and characterizing steps are repeatedly conducted.

Claim 32 (Previously Presented): The method according to claim 29, wherein the step of detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$, is conducted over substantially the entire length of the sample.

Claim 33 (Previously Presented): The method according to claim 29, wherein the step of detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$, is conducted for multiple samples.

Claim 34 (Currently Amended): The method according to claim 29, wherein at least transmission values $I_T(t, r)$ are detected, wherein the method further ~~characterizing step~~ comprises calculating an extinction profile $E_T(t, r)$ of the sample as a function of the sample position r and time t, by finding a log of a ratio of $I_o(t, r) / I_T(t, r)$.

Claim 35 (Previously Presented): The method according to claim 20, further comprising calculating a polydispersity index from a ratio of the segregation speeds determined for specific extinction percentiles.